PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB2004/001088	15.03.2004	02.04.2003

International Patent Classification (IPC) or both national classification and IPC
C09B45/48, C09D11/00

Applicant
AVECIA LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

Response by 2-2-05

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/GB2004/001088

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was field, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

   ☐ a sequence listing

   ☐ table(s) related to the sequence listing

   b. format of material:

   ☐ in written format

   ☐ in computer readable form

   c. time of filing/furnishing:

   ☐ contained in the international application as filed.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Box No. II Priority

1. ☒ The following document has not been furnished:

   ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

   ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

   Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-13
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-13
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V.

V.1. The following documents are referred to in this communication:

D1 : CHEMICAL ABSTRACTS, vol. 61, no. 7141, 14 September 1964 (1964-09-14), Columbus, Ohio, US; abstract no.: 7141d, H. IIDA ET. AL.: "Metal Complex Dyes I. Copper complexes of azo dyes prepared by using 8-aminoquinoline as a diazo component" page 1964 column 1 XP002284432

D2: WO -A- 2004/007622 (intermediate document)

D3: EP -A- 1 241 232

D4: EP -A- 1 270 676

D5: EP -A- 0 902 064

V.2. The subject matter of claims 1-13 seem to be novel and inventive.

V.2.1.

Document D1 discloses (see abstract, formula (V)) a copper complex with a mono azodye, whereby two quinoline moieties are connected in 8-position via the azo bridge. The difference to the dyes of current claim 1 is the missing N-atom in ortho position to the azo bridge. Claim 1 is therefore novel over D1. Refering to the authors of D1, the dyes have better properties to dye polyacrylonitrile instead of wool. Ink jet ink technique is not mentioned in D1.

The problem underlying the current application is to 'provide new magenta inks which meet the current demanding technical requirements of ink jet printing'. The dyes of claim 1 resp. the inks of claim 10 solve this problem.

A skilled person, who is looking for a solution for this problem would not, by considering D1, come to the quinoline mono azo dye complexes of current claim 1 to prepare ink jet inks, because: a) ink jet ink properties of D1 dyes are not mentioned; b) a hint in D1 is missing to prepare an intermediate of an N-heterocyclic diazonium compound with the N-atom in ortho-position, which subsequently leads to the final chelat dye after coupling with a quinoline-5-amino compound. Claims 1 ,8 ,11,12 and 13 are regarded being novel and inventive over D1, as well as the dependend claims 2-7 and 10.

V.2.2.

D2 (intern. Application in japanese language) discloses azo dyes bearing quinoline rings attached in 3-position to the azo group (page 16); the central metal is coordinated here by a hydroxyl group in o-position. The D2-dyes are also used for ink jet recording. As the linking position for the azo group at the quinoline moiety seems to be critical for the claimed dyes, and because the linking position in D2-dyes is generally different, D2

is not regarded being relevant against inventive step of the subject matter for claim 1. Furthermore, the examples of the current application show quinoline moieties not bearing OH groups capable of chelating a metal atom/cation
[As at the current stage no priority document is available, D2 still must be taken into consideration by evaluating novelty resp. inventivity].
V.2.3.
D3/D4/D5 disclose monoazo chelat metal dyes with heterocyclic moieties bearing N-atoms in the ortho-position to the azo bridge (e.g. triazol, pyridine etc.), but generally only naphthyl is mention as the other chromophor ring; hints are missing for taking quinoline instead of naphthaline. Although the dyes of D3/D4/D5 are used for the same purpose as the claimed dyes, they are not relevant against inventive step for current claim 1 because of the missing hint to the quinoline moiety.